

XXXVII.—On a Species of *Limopsis*, now living in the British Seas; with Remarks on the Genus. By J. GWYN JEFFREYS, F.R.S., F.G.S. &c.\*

THE only result of any interest which accrued from my dredgings this year in the northern seas of these islands was the discovery of the *Limopsis aurita* of Sassi in a living state. Last year I procured a few small single valves in the same spot; but, as I had experienced so much difficulty in distinguishing fossil from recent shells, I was not quite certain whether these valves might not have come from a submarine pleistocene bed, notwithstanding the freshness of their appearance, and the epidermis being retained on some of them. However, all doubt was removed on the present occasion. A specimen containing the animal was dredged about twenty-two miles off the Island of Unst in Shetland, at a depth of 85 fathoms, in sandy gravel, together with a tolerably large single valve in an equally recent state. My friend Professor Allman was with me at the time, and has very kindly made a drawing of the soft parts, which I have now the pleasure of exhibiting.

As nothing could be seen of the animal, although it was constantly and carefully supplied with sea-water for some time, I had no alternative but to kill it by immersion in boiling water, in order to examine it and the interior of the shell; and the sketch made by Professor Allman and my notes were therefore *post mortem*, and are not so complete or satisfactory as I could wish.

The appearance of the *Limopsis* while living and in its native element was extremely beautiful. The surface of the shell was clothed with long and fine hairs, which projected far beyond the edge of the valves, like a fringe of silken eyelashes. These hairs form part of the epidermis, and are not contractile; and they doubtless serve to protect or warn the feeble mollusk against the insidious attacks of other animals. When the shell becomes dry, the epidermidal hairs shrivel up, and to some extent lose their former beauty.

The body is of a milk-white colour. The mantle is open in every part except behind; it has no tubes or folds, and its edges are thickened and furnished with papilliform glands. The gills or branchiæ are disposed as in other members of the same family. The foot is large in proportion to the rest of the body, and is shaped like a tobacconist's knife; it can in all probability form a suboval disk at the central portion, as in *Pectunculus*. The few and imperfect particulars here given serve, however, to show

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that the animal of *Limopsis* is closely allied to that of *Pectunculus* in form; and the same remark applies to the shell in each of these genera.

The shell of *Limopsis* differs from that of *Pectunculus* only in the apparatus by which it is closed. In *Pectunculus* the hinge-area or plate at the back of the shell is furnished with a strong ligament which extends from one side to the other, and unites the whole of the hinge; while in *Limopsis* there is no ligament (properly so called), but only a small cartilage which fits into a triangular pit or depression placed just under the beak in each valve. The ligament and cartilage are in either case exterior to and above the hinge-line, but are seated within the beaks. In specimens of *Limopsis* of every age the teeth are continuous; but in *Pectunculus* they are interrupted in the middle, and form two distinct rows which obliquely diverge from the centre. But this last character I do not regard as constant or of much value.

In each of these genera, specimens of the same species vary greatly in being more or less oblique, and in the hinge-margin occasionally projecting at each end to such an extent as to give the shell an appearance of having ears, as is the case in many other genera of the family of *Arcidæ*.

*Nucula* has also a cartilage with a pit for its reception; but in that genus these processes are *internal*, instead of external as in *Limopsis*, and they are placed *below* instead of above the hinge-line.

*Lima* bears no affinity to *Limopsis*, having only a single adductor muscle, and a different kind of hinge-fastening.

The history of the genus *Limopsis* is involved in some obscurity, which is partly owing to the rarity of the work in which it was originally described. According to the 'Lethæa geognostica' of Bronn (whose loss is so deeply felt and deplored by geologists), *Limopsis* was proposed as a new genus by Sassi, in the 'Giornale Ligustico' for 1827; but the British Museum library does not contain any such periodical, and I have not been able to obtain a sight of it in this country. Nyst, in his work on Belgian fossils (1843), stated that he was ignorant of Sassi's publication or its date, although Bronn had given both these particulars twelve years before the above statement was made. Nyst and Galeotti had in 1835 proposed for the same genus the name of *Trigonocalia*. The late Prof. d'Orbigny, equally disregarding the rule of priority in scientific nomenclature, published, in the 'Paléontologie Française' (1844), another name (*Pectunculina*), which has been lately adopted by Dr. Chenu, who makes *Limopsis* and *Trigonocalia* subgenera of D'Orbigny's genus, but upon what grounds it is almost impossible to ima-

gine. Dr. J. E. Gray gave another name (*Limnopsis*) to this genus in 1840; but this may have originated in a *lapsus calami*.

The first conchologist who pointed out the difference between *Limnopsis* and *Pectunculus*, although he retained both in the old Linnean genus *Arca*, was Brocchi, who, in his 'Conchiologia Fossile Subapennina' (1814, vol. ii. p. 485, tab. 11. f. 9), described the species which I have now noticed as an inhabitant of the British seas. His description and remarks are, as usual, most excellent. This species (*L. aurita*) is not uncommon in the Coralline Crag at Gedgrave; and Mr. Searles Wood suspected that it may have lived on to the Red Crag period, as his cabinet contained a specimen, but much water-worn, from that formation.

It is quite impossible to distinguish, as species, the recent shells dredged in our own northern sea from those found in the Coralline Crag; and I believe other species of *Limnopsis* are also derived from Tertiary forms, but that they have not been hitherto identified with them.

The recent species appear to be six in number, viz.:—

1. *multistriata*, Forskål; Red Sea.
2. *Belcheri*, Adams & Reeve. This is perhaps the *Pectunculus granulatus* of Lamarek, an Eocene fossil from Grignon.
3. *munita*, Philippi; from the Sicilian and Calabrian Tertiaries. Probably the same as two recent specimens in the British Museum, the locality of which is unknown: or it may be a variety of the next.
4. *aurita*, Brocchi (*Trigonocalia sublavigata*, Nyst); Shetland. The single valve of a *Limnopsis*, dredged by Mr. M'Andrew on the coast of Norway, and now in the British Museum, appears to belong to a variety of this species, and to differ from the typical form only in the inside of the front margin being notched—a character which is not uncommon in varieties of *Astarte sulcata* and *A. triangularis*. Prof. Sars, in his Catalogue of 1857, regards this last specimen as belonging to *L. munita*; while Danielssen, in his more recent work published in 1859, refers it to the *Pectunculus pygmaeus* of Philippi.
5. *cancellata*, Reeve; not uncommon on shells of a variety of *Phorus Indicus*, but apparently fossil.
6. *pellucida*, Jeffreys; dredged off Guernsey. A minute species; but, although quite distinct from the young of any other species, it requires further investigation in regard to its true position.

Although the particulars which I am enabled to give of the

animal of *Limopsis* are confessedly meagre, I have been induced to publish them in consequence of nothing being yet known on the subject; and at any rate I hope this notice of another link being supplied in the chain which connects the tertiary with the recent fauna may not be uninteresting to naturalists.

XXXVIII.—On some new Species of Scissurellidæ from the Seas of China and Japan. By ARTHUR ADAMS, F.L.S. &c.

THE genus *Scissurella* of D'Orbigny is distinguished from *Anatomus*, H. & A. Adams, in being provided with a foramen instead of a fissure. It is synonymous with *Schismope* of Jeffreys, and *Woodwardia* of Crosse and Fischer. The new species of *Scissurella* and *Anatomus* which I now describe, from the seas of China and Japan, were dredged from deep water and from a bottom of sandy mud and broken shells.

1. *Scissurella carinata*, A. Adams.

*S.* testa ovata, depressa; spira planiuscula; anfractibus  $2\frac{1}{2}$ , planis, ultimo supra carinam striis radiantibus (ad suturas validioribus) instructo, infra carinam cingulis elevatis transversis ornato, basi lineis elevatis concentricis, interstitiis cancellatis instructo; apertura obliqua; labio recedente.

*Hab.* Okosiri; 35 fathoms. Seto-Uchi; 16 fathoms. Gotto; 71 fathoms.

This species and the others I have named *Scissurella* have a foramen instead of a fissure, and would be called by some *Schismope* or *Woodwardia*, both of which names I believe to be synonyms of *Scissurella* proper. *S. carinata* has a flattened spire and three prominent keels on the last whorl below the carinate periphery. It most nearly resembles *S. d'Orbigny*; but there are three keels besides the fissural carina.

2. *Scissurella modesta*, A. Adams.

*S.* testa ovata, depressa, stomatelliformi, anguste umbilicata; spira parva vix elata; anfractu ultimo supra carinam concentric striato, infra carinam longitudinaliter plicato, basi lirulis spiralibus ornato; apertura perobliqua, transversim ovata.

*Hab.* Tabu-Sima; 25 fathoms.

A small simple white species, without keels, striated above the somewhat rounded periphery, and obsoletely plicate below.

3. *Scissurella miranda*, A. Adams.

*S.* testa ovata, depressa, late umbilicata; spira planiuscula; anfractu ultimo supra carinam subtilissime concentric striato, infra carinam plicis obliquis subnodosis longitudinalibus distantibus ornato,